

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: PHAM, Hung Cong Tuyên; RECHT, Ambroise

SERIAL NO.: (International Serial No. PCT/FR2004/001033)

FILED: Herewith (International Filing Date: 28 April 2004)

TITLE: HEADPHONE FOR SPATIAL SOUND REPRODUCTION

REMARKS ON PRELIMINARY AMENDMENT

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

In conjunction with the filing of the present application, and prior to an initial Official Action on this matter, please amend the above-identified application as provided in the attached Marked Up Copy and Substitute Specification.

Please note that the following amendments in the Substitute Specification apply to the attached specification and claims labeled for "U.S. filing". This combined application incorporates the original application and any amendments or annex to the International Application in the proper order, including the correct original and substitute pages, claims and drawing sheets.

In this preliminary amendment, please consider the following remarks in conjunction with the amendments to the above-identified application as follows:

REMARKS

The present Preliminary Amendment has been entered for the purpose of placing the application into a more proper U.S. format. In particular, certain grammatical and idiomatic inconsistencies have been corrected by amendment to the specification, and the application is

corrected for certain typographical errors found in the originally submitted application. No new matter has been added by these amendments. The present application incorporates the original filing including any amendments made in the international filing. There was an amendment in the International Application, and there was an annex to the International Preliminary Examination Report. The translation for both sets of claims are attached. The specification is an English translation of an originally French language document. The Substitute Specification and Marked Up Copy apply to the set of claims currently pending for consideration.

The Claims have been amended so as to conform with U.S. requirements and so as to remove multiple dependent claims. The Abstract has been amended so as to conform to U.S. filing requirements.

Applicant respectfully requests that the present Amendment be entered prior to an initial Official Action on the present application.

Date 10-6-05

Customer No. 24106

Respectfully submitted,



John S. Egbert
Reg. No. 30,627
Andrew W. Chu
Reg. No. 46,625

Egbert Law Offices
412 Main Street, 7th Floor
Houston, Texas 77002
(713)224-8080
(713)223-4873 fax

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ABSTRACT OF THE DISCLOSURE

The invention concerns a headphone and a compatible recording device for spatial sound reproduction provided with two earphones, each earphone ~~comprising~~ having a support defining at least partly a cap-like surface comprehensively covering the listener's ear. Each earphone includes at least five speakers arranged on said support. ~~Said~~ The speakers are adapted to reproduce an acoustic field, such that it is perceived as being continuous by the human ear, for acoustic frequencies lower than a given maximum frequency.

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CLAIMS

I claim:

1. (Currently amended) A headset for spatial restitution of a sound ~~fitted with~~ comprising:
two headphones, each headphone comprising:
a bracket defining at least partially a cap-shaped surface ~~including~~ and
globally ~~the listener's~~ an ear of a listener, ~~each headphone comprising~~; and
at least five loudspeakers, arranged on ~~said~~ the hemispheric surface
~~characterised in that, wherein~~ two adjoining loudspeakers are spaced apart by a distance
smaller than half the shortest wavelength corresponding to a given maximum frequency in order to
reconstruct an acoustic field perceived as continuous by the human ear, for acoustic frequencies
smaller than said given maximum frequency, said maximum frequency being a frequency audible
to the average human ear.
2. (Currently amended) A headset according to claim 1 comprising:
at least six loudspeakers per headphone.
3. (Currently amended) A headset according to claim 1, wherein said maximum frequency
is 5 kHz and wherein two adjoining loudspeakers are spaced apart by a distance equal to or less than
~~3 cm~~ cm.
4. (Currently amended) A headset according to ~~any of the previous claims~~ Claim 1, wherein
said headphones are open, said bracket being ~~formed~~ comprised of an armature capable of receiving
said loudspeakers.

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5. (Currently amended) A headset according to ~~any of claims 1 to 3, wherein said~~ Claim 1, wherein the headphones are closed, said bracket comprising a shell defining a cap-shaped surface ~~capable of~~ receiving said loudspeakers.

6. (Currently amended) A sound recording device intended for later spatial restitution, ~~formed~~ of comprising:

a headset according to ~~any of the preceding claims~~ Claim 1, wherein the loudspeakers are replaced with multidirectional or cardioid microphones, the recording cap-shaped surface corresponding to said recording device being confused with said cap-shaped surface (for acoustic transmission) of one said headset.